

Ecloud Measurements With Amorphous Carbon Coated Beam Pipe

RFA3
I: CLOUD3

RFA2
I: CLOUD2

RFA1
I: CLOUD1

I: GAUSSA

I: GAUSSB

Amorphous Carbon

Steel

RFA4
I: CLOUD4
(ANL)

For Ecloud Working Group Meeting on Feb 10, 2011



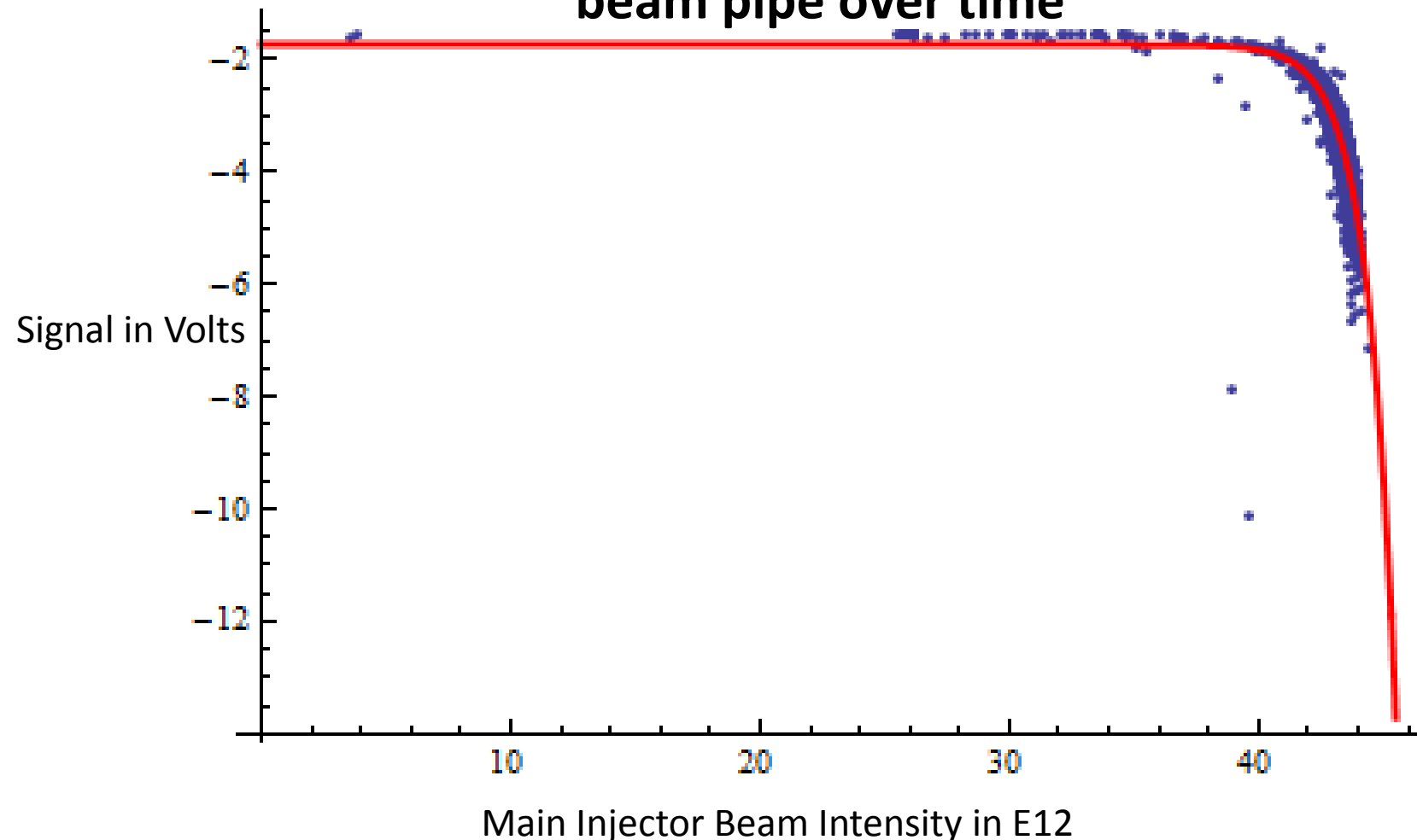
$$\text{Signal} = z - e^{a \cdot (x - X_0)}$$

x is the beam intensity

When $x = X_0$ the signal equals $z - 1$

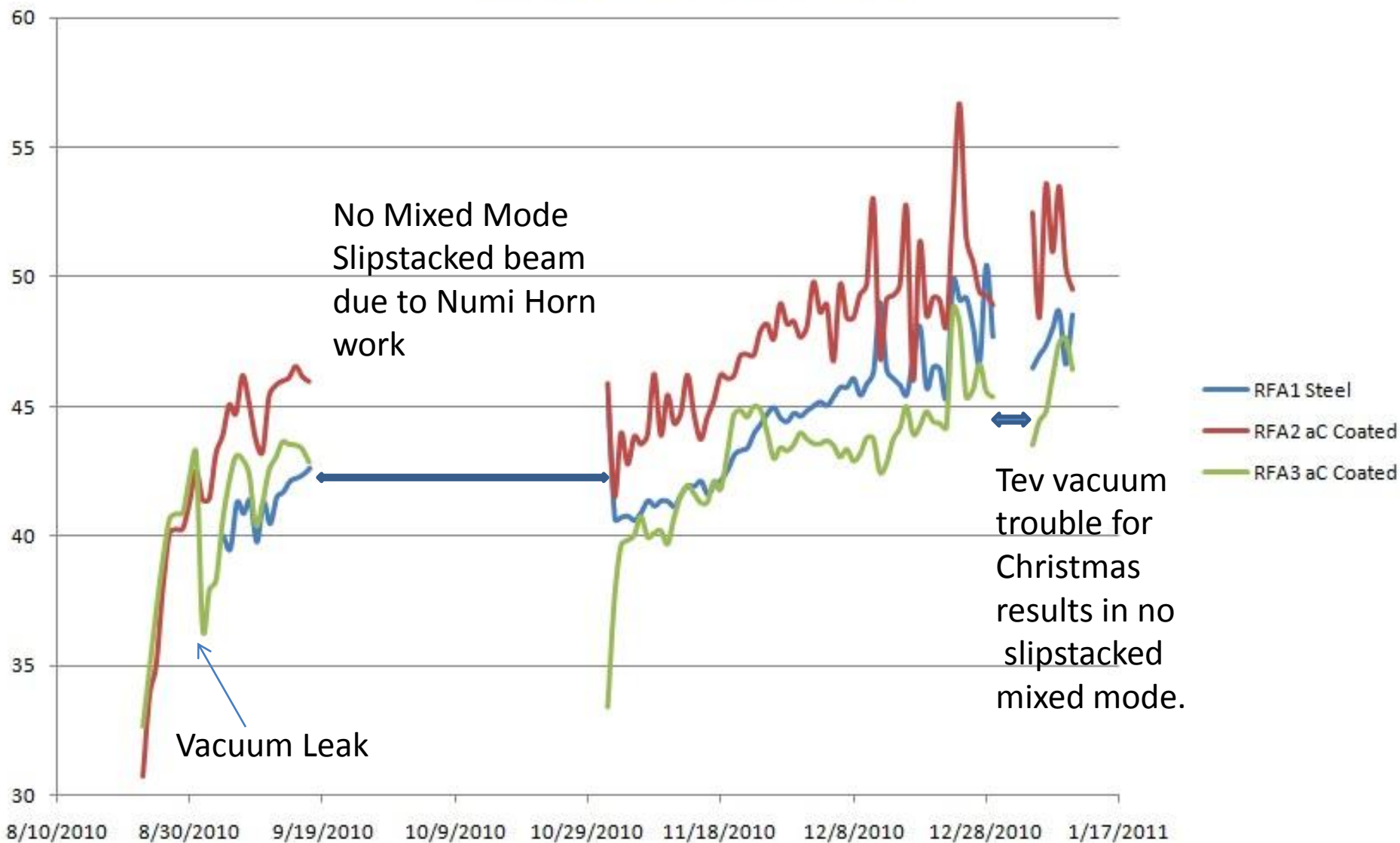
X_0 is the beam intensity when our Ecloud signal is -1 Volt

Thus by tracking X_0 we can track the conditioning of the beam pipe over time



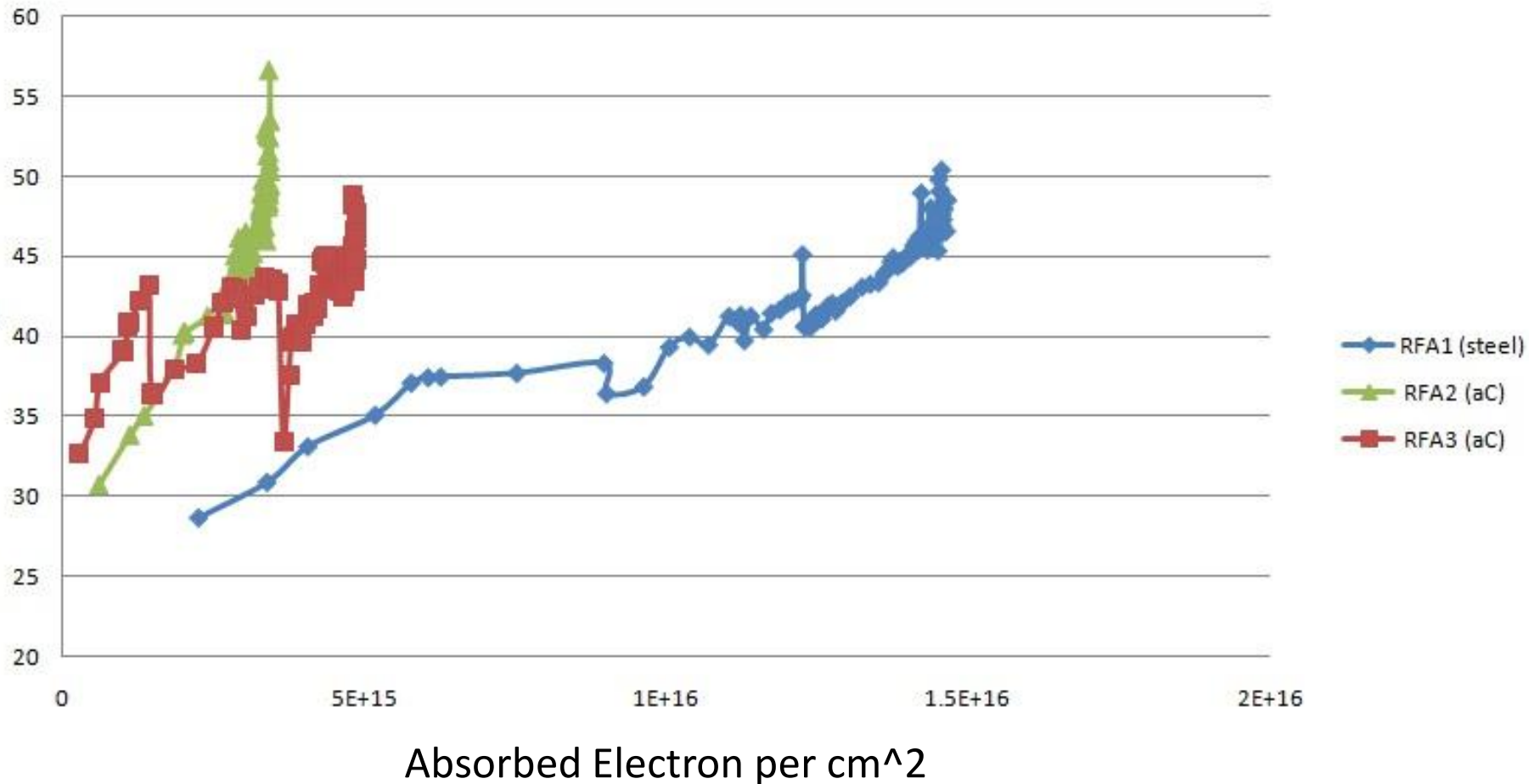
X0 Value is Beam Intensity to Achieve -1 Volt Signal in E12

Time Evolution of X0 Value

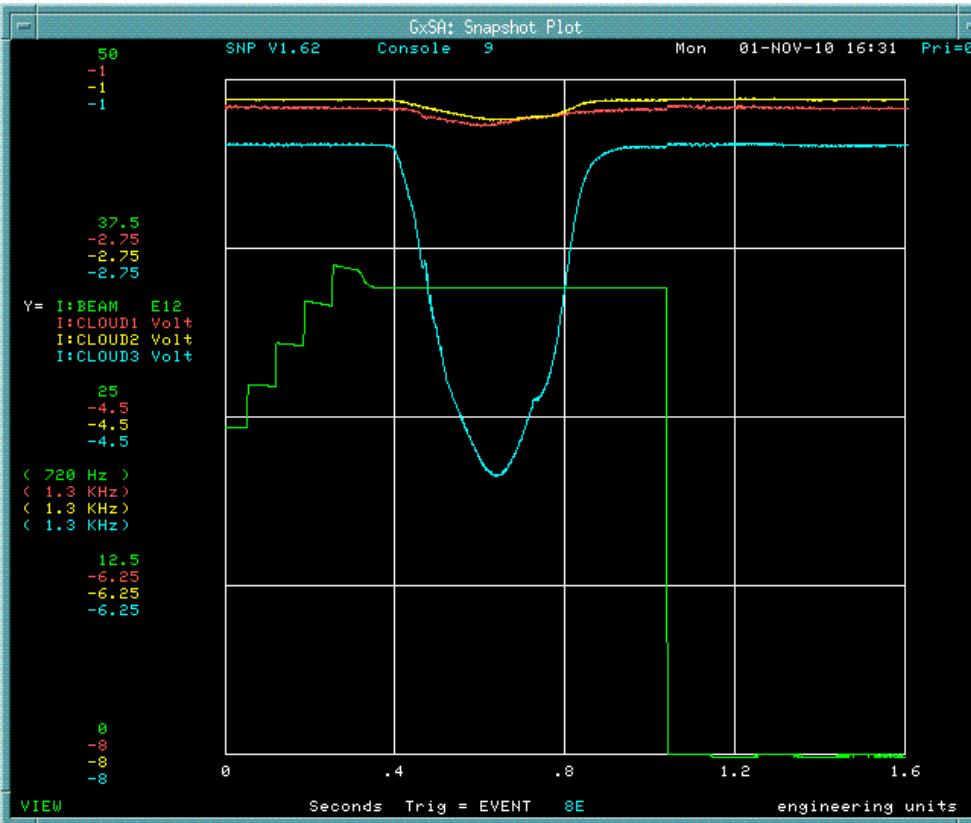


X0 vs Absorbed Electrons per cm² 8/23/2010 to 1/10/2011

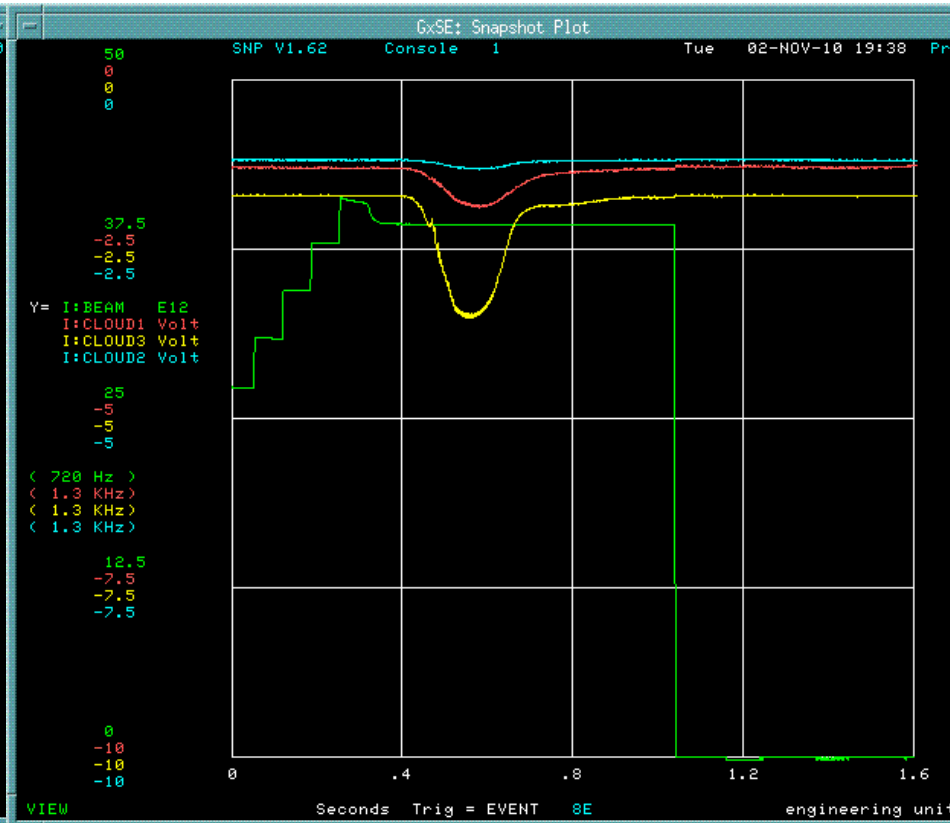
Beam Intensity to achieve -1 Volt Signal



Nov 1 we started running mixed mode after an extended period of time with Pbar only

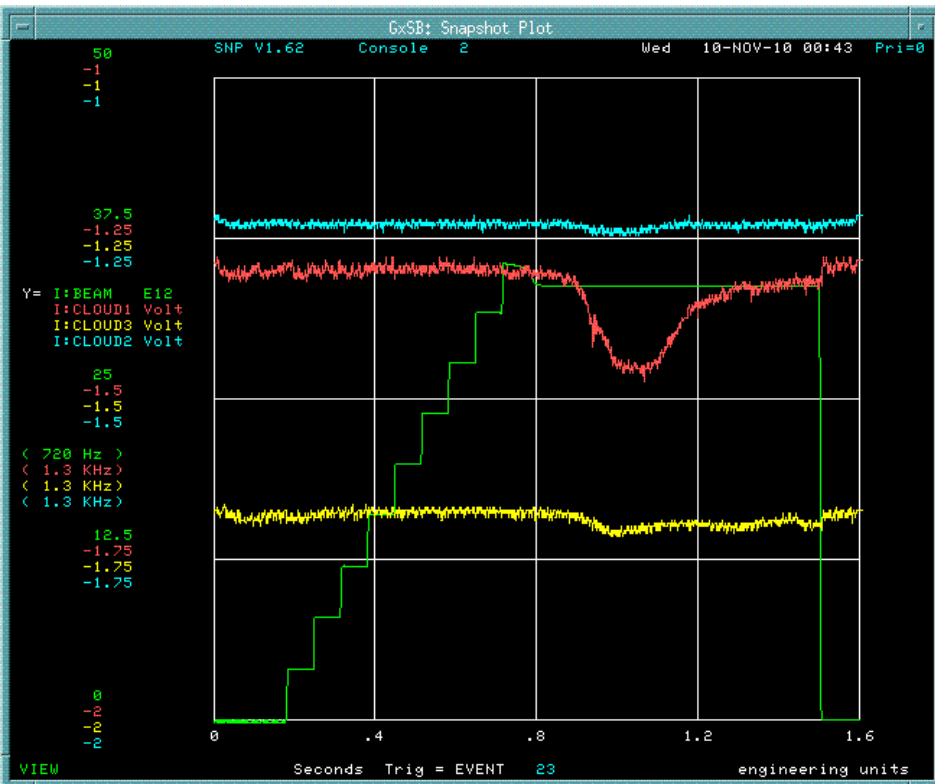


Nov 1 data with huge aC signal

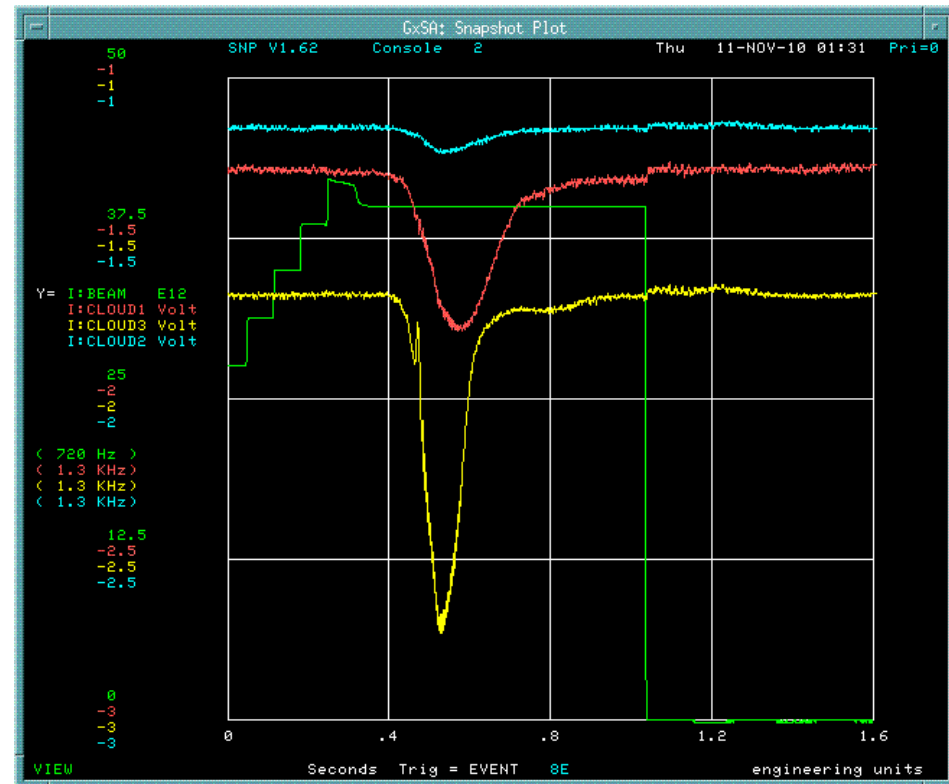


November 2 signal shows faster conditioning of aC in comparison to steel

Nov 10 and Nov 11

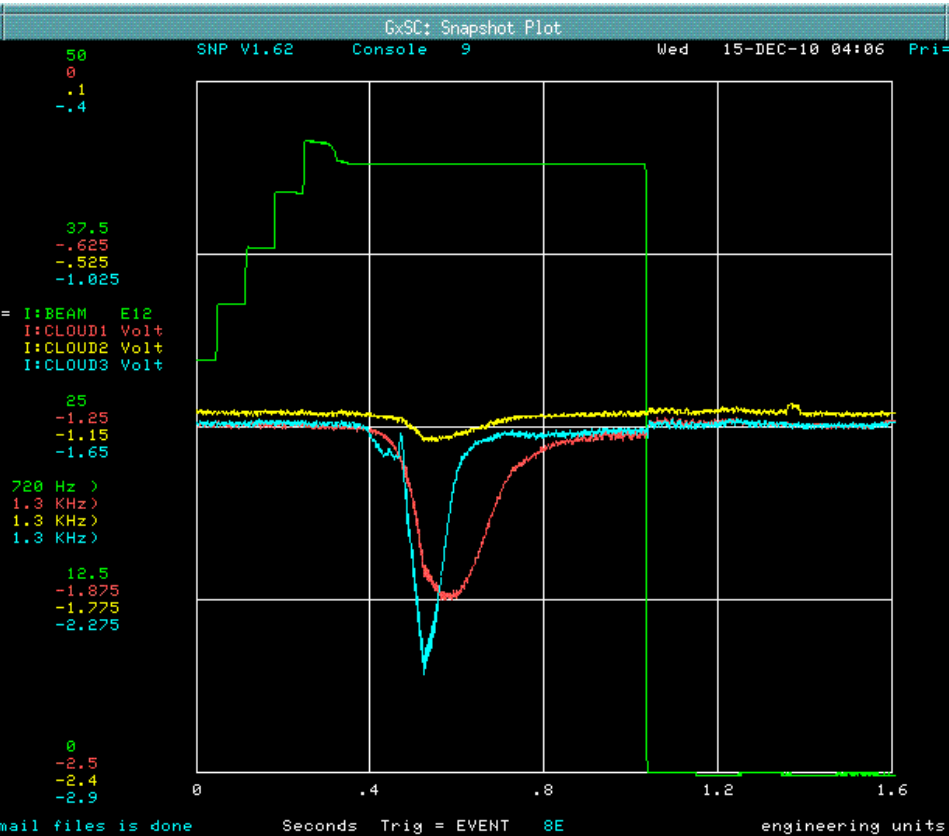


Nov 10 we were running Numi only. The steel signal is stronger.

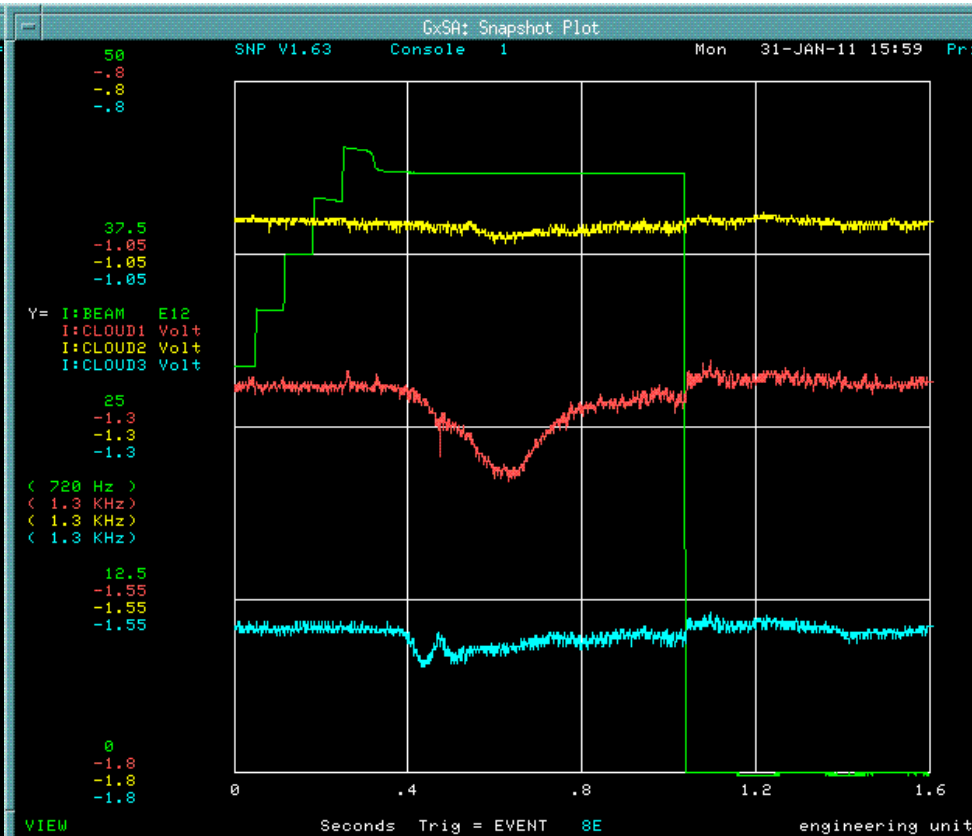


Nov 11 we switched to Numi/Pbar mixed mode. Now aC signal in RFA3 is stronger, while that is RFA2 is weaker.

Dec 15 and Jan 31 mixed mode



Dec 15 mixed mode Pbar/Numi shows a thinner signal for RFA3 (aC) and a fatter shorter signal for RFA1 (steel)



By Jan 31 running mixed mode, the RFA1 signal is the stronger. All are small for the intensities we are running.